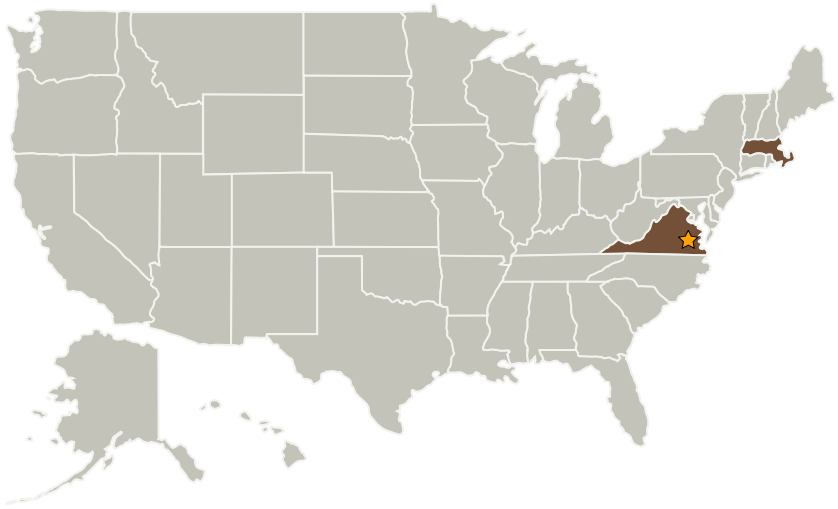
Optical Landing Hazard Sensor, Phase I

Completed Technology Project (2005 - 2005)

Project Introduction

Visidyne proposes to investigate an active optical 3D imaging LADAR as the sensor for an automated Landing Hazard Avoidance system for spacecraft landing on the Moon or Mars. Specifically, the LADAR utilizes low cost and electrically efficient laser diode illumination and a unique focal plane array detector concept that may be implemented in CCD or CMOS technology to provide high resolution, wide-field images of terrain relief at high frame rates. High slopes, boulders or other obstructions at the landing site present a significant risk to the safe arrival of robotic supply craft or crewed vehicles. This sensor will provide range images for extraction of topographical information required for the landing guidance system to manage vehicle descent to avoid dangerous locations within the landing zone. Approach rate to the surface (range rate) will also be supplied to the landing guidance system. Phase I will demonstrate the capabilities of the system through modeling and analysis and result in a design for a prototype sensor that may be realized under a Phase II.

Primary U.S. Work Locations and Key Partners



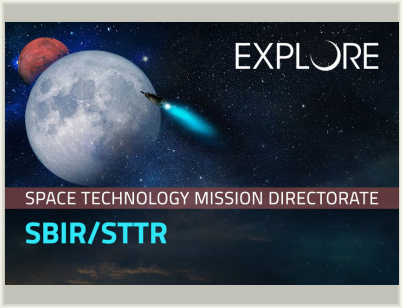


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Table of Contents

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Langley Research Center (LaRC)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

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Organizations Performing Work	Role	Type	Location
★Langley Research Center(LaRC)	Lead Organization	NASA Center	Hampton, Virginia
Visidyne, Inc.	Supporting Organization	Industry	Burlington, Massachusetts

Primary U.S. Work Locations	
Massachusetts	Virginia

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Principal Investigator:

Christian Trowbridge

Technology Areas

Primary:

- TX09 Entry, Descent, and Landing
  - └ TX09.4 Vehicle Systems
    - └ TX09.4.4 Atmosphere and Surface Characterization